

## **Gaming Device with Directional Audio Cues**

### **Field of the Invention**

The invention relates generally to gaming systems, and more specifically to  
5 gaming systems having directional audio cues.

### **Background of the Invention**

A wide variety of gaming devices are now available to gamers and to casino operators in computerized form, from slot machines to games that are traditionally 10 played live such as poker and blackjack. These computerized games provide many benefits to the game owner and to the gambler, including greater reliability than can be achieved with a mechanical game or human dealer, more variety and animation in presentation of a game, and a lower overall cost of production and management.

Computerized video game systems must be designed with many of the same 15 concerns as their mechanical and table game ancestors - they must be fair, they must provide sufficient feedback to the gamer to make the game fun to play, and they must meet a variety of gaming regulations to ensure that both the machine owner and gamer are honest and fairly treated in implementing the game. Further, they must provide a gaming experience that is at least as attractive as the older mechanical gaming machine 20 experience to the gamer, to ensure success in a competitive gaming market.

Many computer elements have been employed in gaming systems, from computerized animation to playing prerecorded sounds through a gaming system's speakers. These are carefully designed, along with the general theme and other 25 elements of a gaming system, to attract the attention of gamers and to provide a memorable gaming experience. The sounds presented often include sound effects and music consistent with a particular game's theme, and play specific sounds to indicate the status of the game. But, with the wide variety of animations, actions, and other elements presented to the game player, it can become difficult to sort out the ambient effects from the central elements of the game.

It is therefore desirable to direct the player's attention to specific central elements of the game in various stages of game play.

### **Summary of the Invention**

5        In one embodiment of the invention, a computerized gaming system is provided. The computerized gaming system comprises an audio module operable to play audio cues to direct the visual attention of a player of the gaming system, the audio cues comprising representation of the physical location of a game element presented on a video screen by variation in at least one of pitch, instrument, rhythm, 10 volume, echo, phase, and location-specific sounds. The gaming system further comprises a gaming module, which includes a processor and gaming code which is operable when executed on the processor to conduct a game of chance on which monetary value can be wagered.

15        **Brief Description of the Figures**

Figure 1 shows a computerized gaming system having an audio module consistent with an embodiment of the present invention.

Figure 2 shows a plurality of audio element tracks consistent with an embodiment of the present invention.

20        Figure 3 is a flowchart showing a method of generating an audio track in a computerized gaming system, consistent with an embodiment of the present invention.

### **Detailed Description**

In the following detailed description of sample embodiments of the invention, 25 reference is made to the accompanying drawings which form a part hereof, and in which is shown by way of illustration specific sample embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be utilized and that logical, mechanical, electrical, and other

changes may be made without departing from the spirit or scope of the present invention. The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the invention is defined only by the appended claims.

The present invention provides in one embodiment a computerized gaming system having an audio module that is operable to play audio cues to direct the visual attention of a player of the gaming system, the audio cues comprising representation of the physical location of a game element presented on a video screen by variation in at least one of pitch, instrument, rhythm, volume, echo, phase, and location-specific sounds. The gaming system further comprises a gaming module, which includes a processor and gaming code which is operable when executed on the processor to conduct a game of chance on which monetary value can be wagered.

Figure 1 illustrates an example embodiment of a computerized gaming system, consistent with the present invention. The gaming system includes a video screen 101 for displaying game elements, speakers 102 for playing sounds in conjunction with the game, coin tray 103 for paying winning gamers, and buttons 104 for controlling operation of the game. The system shown further includes a card reader 105 for managing player identity and stored credits, as well as a coin slot 106 for depositing tokens or coins. During game play, various game elements are presented on the screen, such as cards flipping in a video poker game, reels spinning in a video slot machine, and other such things. Also, a variety of indicators, such as credits indicator 107, indicators of winning hands or reel combinations, and the like are presented, depending on the game being played and the current game status. Further, animations relevant to the theme of the game are presented, such as the bouncing beach ball 108.

Because modern computerized gaming machines often have such a wide variety of visual elements competing for the gamer's attention, it is sometimes difficult for the gamer to see all that is presented. The present invention seeks in various embodiments to direct the gamer's attention on the video screen by presenting position-indicating audio cues, increasing the odds that the player will be focused on certain game elements at certain times. Alternate embodiments direct the player's

attention to mechanical game elements, top box displays, or other such game elements.

This may be achieved in a variety of ways in various embodiments of such gaming systems. Figure 2, for example, shows a video screen for a five-reel slot game, in which a winning combination has been reached. Although there are fifteen reel

5 pictures visible on the screen, the gamer's attention should be drawn to the "V"-shaped pattern formed by the "Bar" symbols that form the winning combination. This is achieved in one embodiment of the present invention by using audio cues, such as by using pitch, instrument, rhythm, volume, echo, phase, or location-specific sounds to direct the player's attention to specific regions of the screen.

10 In this example, a sequence of five tones is played back such that each tone in the series represents one of the five reels, from left to right. High tones represent the top reel picture, middle tones represent the middle reel picture, and low tones represent the bottom reel picture. Therefore, a sequence of high, middle, low, middle, high would be played back to audibly draw the player's attention to the winning pattern

15 visually presented on the video display. Phase can also be altered to create sound that appears to be local to each of the reels, and such sounds are combined with panning in further embodiments to provide greater horizontal position indication.

Further embodiments of a reel slot machine game such as that of Figure 2 will use sounds in other ways to indicate additional game elements, such as assigning a pitch, instrument, rhythm, phase, or other unique sound parameter to each of the five 20 reels. As each reel starts and stops, its corresponding unique spin sound starts and stops. The gamer can therefore identify the various sounds with each of the five associated reels, and can tell by sound as well as through vision when the various reels are starting, spinning, and stopping.

25 Panning and other such effects are also used to direct the player's attention to other game elements, such as when the credits are changed at 107 or an animation is presented at 108 of Figure 1. These sounds are also applied to other game elements in various embodiments, including indicating player-selected buttons, various tallies or totals, bonus indicators and animations, and the like. In addition, panning is combined

in some embodiments with the various other audio elements to provide enhanced spatial cues to direct the gamer's attention to specific visual elements. For example, in some games where multiple instances of the same element are present, such as in some bonus rounds, a sound associated with each unique element will not be enough to 5 distinguish each of the identical elements. In such cases, a sound representing the element is combined with panning, phase delay, echo, or other such effects.

Figure 3 shows an example of such a display, consistent with an example embodiment of the present invention. Considering that the four cherries shown are the relevant elements to which the gamer's attention is to be directed, panning and echo 10 are employed along with a cherry element-specific sound to direct the gamer's attention to each of the cherries presented in a three-dimensional space. First, a cherry-associated sound is played panned left and with echo, indicating the left position and relative distance of cherry 301. Next, a left-center panned cherry sound is played with no echo, drawing the player's attention to Cherry 302. Similarly, a cherry 15 sound panned right-center is played next with moderate echo representing cherry 303, and finally an echoed cherry sound is played panned right to draw the gamer's attention to cherry 304. Various other embodiments use reverberation, equalization, and other such effects to provide audible cues to the position of an object in three-dimensional or other multi-dimensional space.

20 As a further example of multi-dimensional space, consider the cherries of Figure 3 as moving objects. In addition to the audible position cues mentioned previously, the velocity of each cherry is further represented by pitch. The previous effects are further revised as the cherries move, so that the audio cues provided remain consistent with each cherries' position.

25 The examples shown here have illustrated various embodiments of the invention in which spatial audio cues are presented in a computerized gaming machine to direct the player's attention to various elements of the game presented on a video screen. These cues will help draw a game player's attention to specific game elements, even in relatively complex games involving significant numbers of changing elements,

sounds, and player actions. More complex embodiments of the invention will employ multiple elements, including pitch, instrument, rhythm, volume, echo, phase, and location-specific sounds, alone or in combination with panning, to provide greater spatial cuing for the benefit of the gamer.

5        Although specific embodiments have been illustrated and described herein, it will be appreciated by those of ordinary skill in the art that any arrangement which is calculated to achieve the same purpose may be substituted for the specific embodiments shown. This application is intended to cover any adaptations or variations of the invention. It is intended that this invention be limited only by the  
10      claims, and the full scope of equivalents thereof.